Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of decoding digital audio data, comprising the steps of:

obtaining an input sequence of data elements representing encoded audio samples;

preprocessing the input sequence of data elements ~~by calculating~~ to produce an array of sum data and an array of difference data using selected data elements from the input sequence;

~~calculating~~ producing a first sequence of output values using the array of sum data;

~~calculating~~ producing a second sequence of output values using the array of difference data; and

forming decoded audio signals from the first and second sequences of output values.

2. (Previously Presented) A method as claimed in claim 1 wherein the array of sum data is obtained by adding together respective first and second data elements from the input sequence, the first and second data elements being selected from mutually exclusive sub-sequences of the input sequence.

3. (Previously Presented) A method as claimed in claim 1 wherein the array of difference data is obtained by subtracting respective first data elements from corresponding second data elements of the input sequence, the first and second data elements being selected from mutually exclusive sub-sequences of the input sequence.

4. (Currently Amended) A method as claimed in claim 1 wherein the step of ~~calculating~~ preprocessing the input sequence of data elements to produce an array of sum data and an array of difference data comprises:

dividing the input data sequence into first and second equal sized sub-sequences, the first sub-sequence comprising the high order data elements of the input sequence and the second sub-sequence comprising the low order data elements of the input sequence;

~~calculating~~ producing the array of sum data by adding together each respective data element of the first sub-sequence with a respective corresponding data element of the second sub-sequence; and

~~calculating~~ producing the array of difference data by subtracting each respective data element of the first sub-sequence from a respective corresponding data element of the second sub-sequence.

5. (Currently Amended) A method as claimed in claim 1 wherein the step of ~~calculating~~ producing a first sequence of output values comprises performing a multiply-accumulate operation utilizing each of the sum data elements.

6. (Currently Amended) A method as claimed in claim 1, wherein the step of ~~calculating~~ producing a second sequence of output values comprises performing a multiply-accumulate operation utilizing each of the difference data elements.

7. (Previously Presented) A method as claimed in claim 1 wherein the input sequence of data elements is derived from MPEG encoded audio data, and wherein the decoded audio signals comprise pulse code modulation samples.

8. (Currently Amended) A method of decoding a sequence of m, m an even positive integer, input digital audio data samples S[k], where k = 0, 1, ... (m-1), to produce a set of n, n an even positive integer, output audio data samples V[i], where i = 0, 1, ...(n-1), comprising the steps of:

a) ~~Calculating~~ producing an array of sum data $S_{ADD}[k]$ according to
$S_{ADD}[k] = S[k] + S[m-1-k]$ for k = 0, 1, ...(m/2-1)

b) ~~calculating~~ producing an array of difference data $S_{SUB}[k]$ according to
$S_{SUB}[k] = S[k] - S(m-1-k)$ for k = 0, 1, ...(m/2-1)

c) ~~calculating~~ producing a first output audio data sample by a multiply-accumulate operation according to

$$V[2i] = V[2i] + N[i, k]*S_{ADD}[k] \quad \text{for } k = 0, 1, \ldots (m/2-1)$$

$$\text{where } N[i, k] = \cos\left[\frac{(32 + 2i)(2k + 1)\pi}{64}\right]$$

d) ~~calculating~~ producing a second output audio data sample by a multiply-accumulate operation according to

$$V[2i+1] = V[2i+1] + N[i, k]*S_{SUB}[k] \quad \text{for } k = 0, 1, \ldots (m/2-1)$$

$$\text{Where } N[1, k] = \cos\left[\frac{(32 + (2i + 1))(2k + 1)\pi}{64}\right]$$

e) and repeating steps c) and d) for i = 0, 1, ... (n/2-1) to ~~obtain~~ produce a full set of output data.

9. (Original) A method as claimed in claim 8, wherein the number m of input digital audio data samples is 32, and the number n of output audio data samples is 32.

10. (Previously Presented) A method as claimed in claim 8 wherein the decoding steps are repeated for decoding a series of frames of encoded audio data in an MPEG format.

11. (Currently Amended) A synthesis sub-band filter for use in decoding digital audio data, comprising:

means for receiving or retrieving an input sequence of data elements comprising encoded digital audio data;

~~pre-calculation~~ pre-processing means for ~~calculating~~ producing an array of sum data and an array of difference data using selected data elements from the input sequence; and

transform ~~calculation~~ output means for ~~calculating~~ producing a first sequence of decoded output values using said array of sum data and a second sequence of decoded output values using said array of difference data.

12. (Currently Amended) A synthesis sub-band filter as claimed in claim 11 wherein the ~~pre-calculation~~ pre-processing means and transform ~~calculation~~ output means collectively perform an inverse modified discrete cosine transform ~~of~~ on the encoded digital audio data.

13. (Previously Presented) An MPEG decoder including a synthesis sub-band filter as claimed in claim 12.

14. (Currently Amended) An MPEG decoder comprising:

means for receiving an input sequence of data elements comprising encoded digital audio data;

means for ~~calculating~~ producing an array of sum data and an array of difference data using selected data elements from the input sequence; and

means for ~~calculating~~ producing a first sequence of decoded output values using said array of sum data and a second sequence of decoded output values using said array of difference data.

15. (Previously Presented) The MPEG decoder of claim 14 wherein the means for receiving an input sequence comprises a bitstream unpacking and decoding circuit.

16. (Currently Amended) The MPEG decoder of claim 14 wherein the means for ~~calculating~~ producing an array of sum data and an array of difference data comprises a reconstruction circuit.

17. (Currently Amended) The MPEG decoder of claim 14 wherein the means for ~~calculating~~ producing a first sequence of decoded output values comprises an inverse mapping circuit.

18. (Previously Presented) The method of claim 2 wherein the array of difference data is obtained by subtracting respective first data elements from corresponding second data elements of the input sequence, the first and second data elements being selected from mutually exclusive sub-sequences of the input sequence.

19. (Currently Amended) The method of claim 5 wherein the step of ~~calculating~~ producing a second sequence of output values comprises performing a multiply-accumulate operation utilizing each of the difference data elements.

20. (Previously Presented) The method of claim 9 wherein the decoding steps are repeated for decoding a series of frames of encoded audio data in an MPEG format.